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**Collaborative Course Development!**

Thanks to my colleagues Prof. Dr. Markus Bick and Prof. Dr. Franz Lehner who have developed parts of the Knowledge Management Course which we taught together during the Jyväskylä Summer School Course 2011.

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ESCP Europe Campus Berlin
Web: [http://www.escpeurope.de/wi](http://www.escpeurope.de/wi)

**Prof. Dr. Franz Lehner (Assessment, Process Integration)**
University of Passau
Web: [http://www.wi.uni-passau.de/](http://www.wi.uni-passau.de/)
Types and Classes of Knowledge

Knowledge

Information

Data

Characters

“high flyer”

stock price: 81,60 €

81,60

“1“, “6“, “8“ and “,”

interpretation/cross-Linking

context

syntax

character set

stock price: 81,60 €

81,60
Related Concepts (modified, North, 1998)

- **Symbol**
  - +syntax

- **Data**
  - +meaning

- **Information**
  - +context

- **Knowledge**
  - +use

- **Skill**
  - +applying to new settings

- **Competence**
  - +uniqueness

- **Competitiveness**
  - +
Definition – Knowledge

“Knowledge comprises all cognitive expectancies – observations that have been meaningfully organized, accumulated and embedded in a context through experience, communication, or inference – that an individual or organizational actor uses to interpret situations and to generate activities, behavior and solutions no matter whether these expectancies are rational or used intentionally.” (Maier 2002)

“A set of data and information (when seen from an Information Technology point of view), and a combination of, for example know-how, experience, emotion, believes, values, ideas, intuition, curiosity, motivation, learning styles, attitude, ability to trust, ability to deal with complexity, ability to synthesize, openness, networking skills, communication skills, attitude to risk and entrepreneurial spirit to result in a valuable asset which can be used to improve the capacity to act and support decision making.” (CEN 2004)
“Knowledge management is defined as the management function responsible for the regular selection, implementation and evaluation of goal-oriented knowledge strategies that aim at improving an organization’s way of handling knowledge internal and external to the organization in order to improve organizational performance. The implementation of knowledge strategies comprises all person-oriented, organizational and technological instruments suitable to dynamically optimize the organization-wide level of competencies, education and ability to learn of the members of the organization as well as to develop collective intelligence.“

(Maier 2002)

”Planned and ongoing management of activities and processes for leveraging knowledge to enhance competitiveness through better use and creation of individual and collective knowledge resources.”

(CEN 2004)
Types and Classes of Knowledge

Declarative Knowledge:
• knowing that

Procedural Knowledge:
• knowing how

- Position, room
- Lecture time
- Traffic rules
- Navigation
- Lecture behavior
- Traffic behavior

[Source: http://kartta.jkl.fi]
Types and Classes of Knowledge

Organizational Knowledge:
• consists of the critical intellectual assets within an organization

Individual Knowledge:
• knowledge of each person (employee)

- Building cars….
- Steering / using production facilities

[Picture Source: http://commons.wikimedia.org]
Types and Classes of Knowledge

**Explicit Knowledge:**
• codified knowledge that can be easily shared and understood

- Traffic rules
- Driving instructions
- ...

**Implicit / Tacit Knowledge:**
• knowledge that people carry in their minds and is, therefore, difficult to access

- Traffic customs
- Interpretations
- ...

[Picture Source: http://commons.wikimedia.org]
SECI Model (Nonaka & Takeuchi, 1996)

- Socialization
- Externalization
- Combination
- Internationalization
SECI Processes

- Socialization: Transfer tacit knowledge from one person to another person
- Externalization: Translate tacit knowledge into explicit knowledge in a repository
- Combination: Combine different bodies of explicit knowledge to create new explicit knowledge
- Internalization: Extract the explicit knowledge from a repository that is relevant to a particular person’s need and deliver it to that person where it is translated into tacit knowledge
- Cognition: Apply tacit knowledge to a business problem
<table>
<thead>
<tr>
<th></th>
<th>Person</th>
<th>Group</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>from team A to team B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic Processes
Knowledge Sharing
Knowledge Exchange
Knowledge Transfer
Selected Knowledge Exchange Models

- Know-How transfer model (after Boeglin)
- Szulanski’s stepwise model of Best Practices Transfer
- Internal Knowledge Transfer model (Krogh)
- Richter’s Transfer Potential Absorption model
- Zander & Kogut’s Transfer and Imitation model
Boeglin’s model of Know-How Transfer

Sender

<table>
<thead>
<tr>
<th>Able</th>
<th>Unable</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;W</td>
<td>W/UA</td>
</tr>
<tr>
<td>A/UW</td>
<td>Ux2</td>
</tr>
</tbody>
</table>

Receiver

<table>
<thead>
<tr>
<th>Able</th>
<th>Unable</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;W</td>
<td>W/UA</td>
</tr>
<tr>
<td>A/UW</td>
<td>Ux2</td>
</tr>
</tbody>
</table>

Know-How Transfer

Leadership Problem

Communication Problem

Combined L/C Problem
The Step-Model of Best-Practices Transfer (Szulanski, 1996)

<table>
<thead>
<tr>
<th>Influence Factors</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Characteristics</td>
<td>Ambiguity</td>
</tr>
<tr>
<td></td>
<td>Unproven</td>
</tr>
<tr>
<td>Sender Qualities</td>
<td>Lack of Motivation</td>
</tr>
<tr>
<td></td>
<td>Perceived as unreliable</td>
</tr>
<tr>
<td>Receiver Qualities</td>
<td>Lack of Motivation</td>
</tr>
<tr>
<td></td>
<td>Insufficient Absorptive Capacity</td>
</tr>
<tr>
<td></td>
<td>Insufficient Retentive Capacity</td>
</tr>
<tr>
<td>Context</td>
<td>Barren Organisational Context</td>
</tr>
<tr>
<td></td>
<td>Arduous Relationship</td>
</tr>
</tbody>
</table>

Initiation
- Prototypes
- Pilots

Ramp-up
- Achieving Target Performance Level

Integration
- Building ‘Routine’
Overview of the factors that influence speed of transfer and early imitation risk (Zander and Kogut, 1995)

<table>
<thead>
<tr>
<th>Influence Factors</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Codifiability</strong>; how far can the required knowledge</td>
<td>The higher codifiability, the faster the transfer and the higher the risk</td>
</tr>
<tr>
<td>be articulated into software and/or documents</td>
<td>of early imitation</td>
</tr>
<tr>
<td><strong>Complexity</strong>; the number of capabilities and competencies required</td>
<td>The higher the complexity, the more difficult (and slow) the transfer and imitation</td>
</tr>
<tr>
<td><strong>Teachability</strong>; how easy/hard it is to disseminate,</td>
<td>The easier it is to teach, the faster the transfer – and imitation</td>
</tr>
<tr>
<td>teach and demonstrate the required knowledge</td>
<td></td>
</tr>
<tr>
<td><strong>System Dependence</strong>; the effort required to assemble</td>
<td>The higher the systems dependence, the longer before the transfer can be</td>
</tr>
<tr>
<td>the necessary groups of experts and the technology</td>
<td>effected and imitations could be started.</td>
</tr>
<tr>
<td>needed</td>
<td></td>
</tr>
<tr>
<td><strong>Parallel Development</strong>; the number of competitors</td>
<td>The higher the competitive pressure, the faster the transfer and the earlier</td>
</tr>
<tr>
<td>engaged in similar transfer and/or product development</td>
<td>the risk of imitation</td>
</tr>
<tr>
<td>projects</td>
<td></td>
</tr>
<tr>
<td><strong>Product Observability</strong>; how easy is it to ‘reverse</td>
<td>The more observability, the sooner imitations may be expected; (this</td>
</tr>
<tr>
<td>engineer’ the product in question or reconstruct it</td>
<td>factor does not apply to internal transfers)</td>
</tr>
<tr>
<td>from published Information?</td>
<td></td>
</tr>
</tbody>
</table>
Overview of the factor structure of the Zander and Kogut transfer model

<table>
<thead>
<tr>
<th>Internal Transfer</th>
<th>Imitation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Codifiability</strong></td>
<td>Codifiability</td>
</tr>
<tr>
<td>Complexity</td>
<td>Complexity</td>
</tr>
<tr>
<td><strong>Teachability</strong></td>
<td>Teachability</td>
</tr>
<tr>
<td>Systems Dependence</td>
<td>Systems Dependence</td>
</tr>
<tr>
<td><strong>Parallel Development</strong></td>
<td>Parallel Development</td>
</tr>
<tr>
<td></td>
<td>Product Observability</td>
</tr>
<tr>
<td><strong>Proprietary vs. Outsourcing</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Key Employee Turnover</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Continuous Development</strong></td>
<td></td>
</tr>
</tbody>
</table>
Some history of KM

- Historical Roots: Durkheims school of sociology
- Late 70’s, early 80’s: simple structural theories, knowledge representation (AI), group remembering (Hartwick et al.)
- Late 80’s, 90’s: Transactive Memory System (Wegner et al.), Organisational Memory (Walsh/Ungson), OM Architecture (Stein, Stein/Zwass), Technical Approaches of OM
- Late 90’s: Growing Importance of Knowledge Architectures (eg. Borghoff/Pareschi et al.)
- 2011: Human-technology balance, social aspects, social KM, …
We find a lot of companies with no or little conscious KM-activities – KM “happens“ (nevertheless the question arises in which situations an active conscious knowledge management is above simply letting things happen).

The practically necessary activities do not refer to shared knowledge, resp. do not require the measures recommended in KM literature (theory – practice gap)

KM-activities are intentionally introduced but are not known to all (resp. not to all that should know about them). Especially in bigger organisations uncoordinated KM-activities can be the consequence. TKM in this sense can mean a reduction of knowledge deficits about KM-activities.

KM activities concentrate on information sharing, while knowledge processes and knowledge sharing are neglected (nevertheless they exist)
Review of KM Field (2)

- Consequences of existing but not explicitly communicated goals of knowledge management (hidden agenda of KM resp. Management)
- Essential KM-processes are understood as “autopoietical” (self-organising)
- Significance of hidden knowledge structures; i.e. informal structures and relationships, which have a specific meaning and which are actually more important than formal structures and tasks (under control of KM)
- Lack of consciousness about the knowledge with business relevance (as a consequence it is not clear what should be addressed by KM)
- Explicit KM activities are related to the business activities – and contrast to hidden and not communicated expectations (e.g. related to unexpected events)
Types and Classes of Knowledge

(Mentzas et al. 2001)
Conceptual Roots (Maier, 2002)

Knowledge Management

- Knowledge goals
- Intellectual asset management
- Knowledge processes
- Roles and organization
- Contents, structures, ontology
- Knowledge economics
- E-Learning
- Knowledge management systems

Knowledge goals

- Technology-oriented
- Human-oriented

Knowledge strategy

Goal-oriented design of handling of knowledge, capabilities and competences

Use of supporting information and communication technologies

Organizational learning

- OL as dynamic process
- Single/double loop Learning
- Identification
- Intuition
- Interpretation
- Innovation management
- Strategic management
- Sociology of knowledge
- Organization development
- Evolution of organization
- Organizational psychology
- Cognitive psychology
- Organization
- Feedback
- Application
- Artificial intelligence
- System dynamics
- Systems theory

Translation to business and management concepts and terminology

Goal-oriented design of handling of knowledge, capabilities and competences

Individual

Group

Organization

Management by ...
Conceptual Roots

- Technology-oriented knowledge management
- Human-oriented knowledge management
- Organizational knowledge
- Knowledge life cycle
- Business and knowledge processes
- Individual knowledge
- Integrating instruments
- KM tools
- Platforms
- Strategy

UNIVERSITY OF JYVÄSKYLÄ
## Conceptual Roots: Knowledge Management Approaches

<table>
<thead>
<tr>
<th></th>
<th>human-oriented</th>
<th>technology-oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>knowledge management</strong></td>
<td>personalization</td>
<td>codification</td>
</tr>
<tr>
<td>approach</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>comprehension of</strong></td>
<td>knowledge is contained in peoples head</td>
<td>documented knowledge; detached from employees</td>
</tr>
<tr>
<td><strong>knowledge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>actors/roles</strong></td>
<td>knowledge worker, networks, and communities of interest</td>
<td>authors, experts, knowledge broker</td>
</tr>
<tr>
<td><strong>knowledge managements</strong></td>
<td>interactive knowledge managements systems</td>
<td>integrative knowledge management systems</td>
</tr>
<tr>
<td><strong>systems (KMS)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>prior knowledge</strong></td>
<td>communication and co-operation, locating of experts, community-support</td>
<td>publication, structuring and integration, search, presentation and visualization of knowledge elements</td>
</tr>
<tr>
<td><strong>management system</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>functions</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **human-oriented**
  - Knowledge management approach: personalization
  - Comprehension of knowledge: knowledge is contained in peoples head
  - Actors/roles: knowledge worker, networks, and communities of interest
  - Knowledge managements systems (KMS): interactive knowledge managements systems
  - Prior knowledge management system functions: communication and co-operation, locating of experts, community-support

- **technology-oriented**
  - Knowledge management approach: codification
  - Comprehension of knowledge: documented knowledge; detached from employees
  - Actors/roles: authors, experts, knowledge broker
  - Knowledge managements systems (KMS): integrative knowledge management systems
  - Prior knowledge management system functions: publication, structuring and integration, search, presentation and visualization of knowledge elements
Conceptual Roots: KM activities

(Probst & Romhardt 2000)
Practical implementation of technologies for knowledge management
Samples of KMS

- Many types of systems

- Issues
  - Integration in Processes
  - User acceptance
  - Usage frequency
  - Multilinguality
  - …
Samples...Content Management
Social Software

- Umbrella of technologies under a fuzzy concept
- Easy way to spread, distribute, and disseminate information to a wide community
- Encourage people to dialogue and discourse
- Easy content creation and sharing
- Aggregating wisdom of the crowds
- Transparent
Ready for Use?

- Is there management support in all parts of an enterprise?
- Does a system fit the users’ work behavior?
- Does a system fit the purpose? What kind of knowledge needs to be shared?
- Are there incentives for knowledge sharing?
- Are there communication options fitting the users needs?
- …
Ready for Global Use?

- Is the process clear, within and outside the organization?
- Are there clear procedures for inter-organizational knowledge exchange (who shares with whom?)
- Is the system multilingual?
  - Multilingual ontologies
  - Tag / Query translations
  - …
- Are there communication options support multilingual communication (e.g. translation support, facilitation)?
- …
Global aspects to KM

- **Coordination**: In international team work several problems such as time differences have to be taken into consideration and managed.

- **Communication**: Common ways of communication including language need to be agreed on.

- **Collaboration**: Team work has to be facilitated by providing suitable mechanisms and support.

- **Knowledge Management**: Including knowledge sharing and transfer is crucial to establish a common knowledge base of all team members — KM as a horizontal aspect!
Global aspects to KM (2)

- Lack of Trust
- Different vocabularies, frames of reference
- Status and rewards of knowledge owners
- Behavior towards mistakes…
Global aspects to KM (Vaidyanathan, 2007)

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Factors</th>
<th>Description</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Ties</td>
<td>Strong ties between members; Prior partner relationships and repeated</td>
<td>Inkpen &amp; Tsang (2005); Griffith et al. (2003); Fjermestad (2005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>transactions; constructive consensus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuration</td>
<td>Decentralization of authority by headquaters; group structure</td>
<td>Inkpen &amp; Tsang (2005); Rulke &amp; Galaskiewicz (2000)</td>
</tr>
<tr>
<td></td>
<td>Stability</td>
<td>Personnel relationships; Low personnel turnover</td>
<td>Inkpen &amp; Tsang (2005)</td>
</tr>
<tr>
<td></td>
<td>Flexibility</td>
<td>Flexible work rules; lack of formal structure; synergistic group processes</td>
<td>Lee &amp; Choi (2003)</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td>Disciplined project management; leadership</td>
<td>Massey et al. (2002); Bassellier &amp; Benbasat (2004); Grover &amp; Davenport</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(2001)</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Shared goals</td>
<td>Shared vision; collective goals; goal clarity</td>
<td>Inkpen &amp; Tsang (2005)</td>
</tr>
<tr>
<td></td>
<td>Shared Culture</td>
<td>Cultural diversity; accommodation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learning</td>
<td>Learning environment; training; mentoring</td>
<td>Lee &amp; Choi (2003); Alavi &amp; Leidner (2001)</td>
</tr>
<tr>
<td>Relational</td>
<td>Trust</td>
<td>Clear and transparent reward; incentives to reduce mistrust</td>
<td>Inkpen &amp; Tsang (2005); Ba et al (2001)</td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td>Active available help within team; sharing of knowledge; expertise</td>
<td>Lee &amp; Choi (2003); Herzog (2001); Thomas-Hunt et al. (2003); Sussman &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>credibility; perceived status</td>
<td>Siegal (2003)</td>
</tr>
<tr>
<td>Technical</td>
<td>Tools</td>
<td>IT to enable DKM; technology acceptance &amp; adoption; compatibility;</td>
<td>Bonifacio et al. (2003); Ba et al (2001); Grover &amp; Davenport (2001);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ontology; security</td>
<td>King et al. (2002); Gregor &amp; Benbasat (1999); Edgington et al. (2004)</td>
</tr>
<tr>
<td></td>
<td>Support and Maintenance</td>
<td>Support from IT; knowledge maintenance; loose structure</td>
<td>Lee &amp; Choi (2003); Hahn &amp; Subramani (2000)</td>
</tr>
</tbody>
</table>
Preliminary Summary

- Broad field with
  - ...a variety of conceptual foundations
  - ...interdisciplinary approaches
  - ...different viewpoints
  - ...possibilities of interventions
  - ...uncertain success probabilities
  - ...unknowns!

Need for frameworks and comparable models!
Guiding questions

- What is the difference between knowledge and competence?
- Give an example for explicit and implicit knowledge. Find an example where explicit knowledge in one culture is implicit in another.
- Do you know international communities on the web where knowledge on a certain topic is shared – is this human- or technology oriented? Give an example.
- In a development process for mobile applications, which knowledge is organizational, which is personal?